

**DEPARTMENT OF BUILDINGS
AND GENERAL SERVICES**

SECTION 14210

ELECTRIC TRACTION ELEVATORS

PART 1 - GENERAL

1.1 Related Documents

- A. All sections of Division 1.
- B. Examine all drawings and all other Sections of the Specifications for requirements therein affecting the work of this Section. Work shall be coordinated with other trades prior to installation to prevent interference and relocations.

1.2 Summary

- A. This section includes the following upgrades and repairs:
 - 1. Repair motor generator sets for both passenger cars.
 - 2. Replace control panels for both passenger cars with new digital electronic controls.
 - 3. Remove existing floor sector and incorporate in new controls.
 - 4. Provide new automatic terminal limits.
 - 5. Provide new automatic self-leveling.
 - 6. Provide new car top inspection stations.
 - 7. Provide new door operation, replace door operators, all hatch door hangers, tracks, interlocks, hardware and door *gibs*.is this correct?
 - 8. Replace hoisting ropes and governor cables.
 - 9. Motor, thoroughly clean and replace worn brushes.
 - 10. Check and realign rails as may be required.
 - 11. Check and replace rollers and roller guides as may be required.
 - 12. Remove all discontinued elevator equipment and associated electrical items.
 - 13. Provide a 1 year Warranty starting when the work is completed.
 - 14. Perform balance load test, and add/subtract counter weight fillers as required.
 - 15. Provide full load test in accordance with ANSI 17.1.
- B. The elevator contractor shall be responsible for the following related work:
 - 1. Cutting and Patching
 - 2. Painting as may be required for a complete upgrade of both passenger cars.
 - 3. Electrical work required for a complete upgrade of both passenger cars and in compliance with Code.

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1.3 Definitions

- A. Electric Traction Elevators: Elevators in which cars are hoisted by wire ropes using electrically driven traction sheaves and are defined to include driving machines; cars; hoistway doors; guide rails; guide rail brackets, roping; buffers; counterweights; signals; control systems; electrical wiring within elevator system; and devices for operations, safety, security, required performance at rated speed and capacity, and for complete elevator installation.
- B. Defective Elevator Work: Operation or control system failures; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; the need for excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.

1.4 Existing Passenger Elevators

- A. Quantity: Two (2) Otis Passenger Elevators
- B. Type Traction
- C. Capacity: 2,000 Pounds
- D. Speed: 300 feet per minute
- E. Power 208 volts, 3 phase, 60 cycle
- F. Travel: Existing
- G. Landings: (6) front
- H. Openings: (6) all in line
- I. Machine & Location Traction

1.5 Submittals

- A. General: submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data for each elevator including capacities, sizes performances, operations, safety features, finishes, and similar information.
- C. Shop Drawings for each elevator showing plans, elevations, sections, and large-scale details indicating service at each landing, machine room layout, coordination with building structure, and relationships with other construction. Indicate variations from specific requirements,

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maximum dynamic and static loads imposed on building structure at points of support, and locations of equipment and signals. Include maximum and average power demands.

- D. Samples of exposed finishes for car, hoistway doors, and signal equipment; 3-inch square samples of sheet materials; and 4-inch lengths of running trim members.
- E. Maintenance manuals for each different electric traction elevator, including operation and maintenance instructions, parts listing with sources indicated, recommended parts inventory listing, emergency instructions, and similar information. Include all diagnostic and repair information available to manufacturer's and installer's maintenance personnel. Submit for Owner's information project close-out.
- F. Inspection and acceptance certificates and operating permits as required by governing authorities for normal, unrestricted elevator use.

1.6 Quality Assurance

- A. **Installer Qualifications:** Shall be the elevator manufacturer or an experienced installer approved by the elevator manufacturer who has completed elevator installations similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- B. **Regulatory Requirements:** In addition to local governing regulations, comply with the applicable provisions of the following:
 - 1. ASME A17.1, "Safety Code for Elevators and Escalators" referred to as the "Code."

1.7 Warranty

- A. **General Warranty:** The elevator warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. **Standard Elevator Warranty:** Submit a written warranty signed by manufacturer agreeing to repair, restore, or replace defective work within the specific warranty period.

PART 2 - PRODUCTS

2.1 Manufacturers

- A. **Manufacturers:** Subject to compliance with requirements, provide electric traction elevators components by one of the following:

Dover Elevator Corporation

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Montgomery Elevator Company
Otis Elevator Company

2.2 Materials and Components

- A. General: Provide manufacturer's standard elevator systems. Where components are not otherwise indicated, provide standard components, published by manufacturer as included in standard pre-engineered elevator systems and as required for a complete system.
- B. Existing Power Supply: 208 V, 60 Hz. 3 phase
- C. Automatic Terminal Limits: Electric limit switches shall be placed in the hatchway near the terminal landings and be designed to cut off the electric current and stop the car should it run beyond either terminal landing.
- D. Automatic Self-Leveling: The elevator shall be provided with self-leveling feature that will automatically bring the car to the floor landings. This self-leveling shall, within its zone, be entirely automatic and independent of the operating device and shall correct for overtravel or undertravel. The car shall also be maintained approximately level with the landing irrespective of the load.
- E. Car Top Inspection Station: A car top inspection station with an "emergency stop" switch and with constant pressure "up-down" direction buttons shall make the normal operation devices inoperative and give the inspector complete control of the elevator.
- F. Door Operation: A new direct current motor driven heavy duty operation shall be furnished and installed, designed to operate the car and hoistway doors simultaneously. Door movements shall be electrically cushioned at both limits of travel and the door operating mechanism shall be arranged for manual operation in event of power failure. The leading edge of the car door shall be provided with a retractable reverse edge arranged to automatically return car and hoistway doors to the open position in event the doors are automatically return car and hoistway doors to the open position in event the doors are automatically return car and hoistway doors to the open in event the doors are obstructed during closing cycle. Doors will then resume closing cycle. Doors shall automatically open when the car arrives at the landing and shall automatically close after an adjustable time interval or when the car is dispatched to another landing. Direct drive geared operators, A. C. controlled units with oil checks, or other deviations for the above area not acceptable.
 - 1. If the electronic detector is activated when the doors are closing and the doors are more than one-third closed, they shall reverse direction and open only partially. The doors shall begin to re-close when the electronic detector is deactivated. The doors shall reopen fully if the electronic detector is activated longer than a fixed time.
 - 2. The doors will remain open as long as the electronic detector senses the presence of a passenger or object in the door opening. If the door movement is obstructed longer than a field programmable time value, a buzzer will sound and the door will close at reduced speed. If the reversing edge contacts a person or object when closing, the doors will stop and resume closing after obstruction has been removed.
 - 3. The current door hold open time shall be changed to a shorter field programmable time

when the electric eye is activated.

4. The microprocessor control system shall provide separated timers for a car call door hold open time and hall call door open time. The door hold open time shall be field programmable.
- G. Ropes: Provide suitable traction steel hoist ropes of size and number to insure proper wearing qualities. Governor ropes shall be iron and steel. All ropes shall consists of at least six strands wound about a hemp core center. Adequate compensation for weight of hoist ropes to be furnished when required to maintain proper counterbalance ration.

2.3 Operation Systems

- A. General: Provide manufacturer's standard microprocessor operation system for each elevator or group of elevators as required to provide automatic or group automatic operation of the type indicated.
- B. Multiple-Car Group--Passenger: The elevator control system shall be microprocessor based and software oriented. The group supervisory operation shall be imbedded within selected car controllers. The system shall be designed so that the failure of any car controller shall not disable the group operation. No separate group controller shall be supplied. The system shall operate in real time, continuously analyzing each car's changing position, condition, and workload. The microprocessor shall constantly scan the system for hall calls. When hall calls are registered, the control system shall instantly calculate the estimated time of arrival for each car to each assigned hall call.

The following factors shall be used in calculating the estimated time of arrival: Number of floors to travel from the current position, the time it takes to travel one floor at top speed, calls assigned to a car, and car reversal time to respond to a call in the opposite direction of travel. An internal constant shall be set, requiring a maximum time for a car to respond to a call. When a car's status changes or additional hall calls are registered, the estimated time of arrival shall be recalculated and calls reassigned if necessary.

- C. Traffic Patterns: The microprocessor shall provide flexibility to meet well defined patterns of traffic such as up peak, down peak, and heavy interfloor demands and still adjust for the many indeterminate variations in these patterns which occur in buildings.
- D. Position Selection: The position selector shall be part of the microprocessor system. The car position in the hoistway shall be digitized through a primary position encoder. The microprocessor control system shall store the floor position and slowdown points in memory.
- E. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:

Traflomatic IV/M; Dover Elevator Corp.
Miprom; Montgomery Elevator Co.
Elevonic; Otis Elevator Co.

- F. Operation system must be non-proprietary, and the operation system software (codes) become the property of the Owner.

- G. Provide the Owner with a complete set of tools and test equipment for the maintenance of the operating systems. The tools and test equipment shall become the property of the Owner.

2.4 Auxiliary Operations

- A. General: In addition to primary operation system features, provide the following operation features for passenger elevators, except where otherwise indicated.
- B. Independent Service Operation: A key switch will be provided in the car operating panel to allow operation from only the car push buttons and to prevent the elevator from answering landing calls. Landing calls will remain registered to be answered when Independent Service Operation is terminated.
- C. Fire Emergency Service: Provide Fire Emergency Service as required by the governing Code. Return of elevators non-stop to a designated floor will be initiated by an elevator smoke detector system or a key switch in a lobby fixture. Phase 1 key switch in lobby to be updated to 1996 Code, 3 position operation.

2.5 Signal Equipment

- A. General: Provide signal equipment for each elevator or group of elevators to comply requirements indicated below.
1. Illuminated hall-call and car-call buttons that light when activated and remain lit until call has been fulfilled. Fabricated of acrylic or other permanent translucent plastic.
 2. Except for buttons and illuminated elements, fabricated signal equipment with exposed surfaces as follows:
 - a) Car and Hall Fixtures: Polished bronze at first floor, satin Fire Service.
- B. Emergency Communication System: Provide hands-free audio and visual 2-way emergency communication between each car and a 24-hour monitoring service. System automatically dials preprogrammed number of monitoring service and identifies elevator location to monitoring service. System is contained in flush-mounted cabinet complete with identification, instructions for use, and battery back-up power supply and complies with the following ADA regulations:
1. Highest operable part of system shall be maximum 48" (1219mm) from floor.
 2. System shall be identified by symbol and lettering located adjacent to the device. Characters shall be 5/8 (16mm) to 2" (51mm) high, raise/32 (08mm), upper case type, and shall be accompanied by Grade 2 Braille.
 3. If system uses handset, minimum cord length shall be 29" (737mm).
 4. If located in a closed compartment, door shall be operable with one hand, shall not require tight grasping, pinching, or twisting of the wrist, and shall required a maximum force of 5 Lbs.

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5. The emergency communication system shall not require voice communication.

2.6Cleanup

- A. Removal of Protection: Remove temporary protection and facilities installed for protection of the work during construction.

2.7Wiring

- A. All wiring shall be in conduit. Minimum size shall be ½ inch ips. Wire shall be THWN or THW. THWN in wet or underground.
- B. Exposed in finished areas wiring shall be in wiremold, run neatly close and parallel to walls. Wiremold runs to center of halls or away from walls shall be run at 90 degrees to adjacent walls. Color as selected by Engineer.
- C. Equipment manufactures shall provide wiring diagrams of their equipment to be wired.
- D. All wiring shall be color coded and shall be tagged at junction boxes or junction points. Wiring shall test free of grounds or crosses between conductors.

2.8Electrical

- A. All work required to be accomplished under the Electrical Trades shall be included in the Elevator Contractor bid price. This shall include all additions, alterations, and new work required to complete this Contract.

END OF SECTION 14210